Sunny Boy Control - BetaBrite

Technote: Usage of an Adaptive Microsystems / BetaBrite LED Display

Scope of Document:

This document explains the programming of the Adaptive Systems / BetaBrite display and the connection of it to a Sunny Boy Control for the display of the PV-plant performance.

This document is a supplement to the technical documentation.

Author: Kent Sheldon
Approved by: Lothar Mueller
Document number: SBC-Betabrite-11:SE4402

Pay attention to all safety relevant information in the technical documentation.
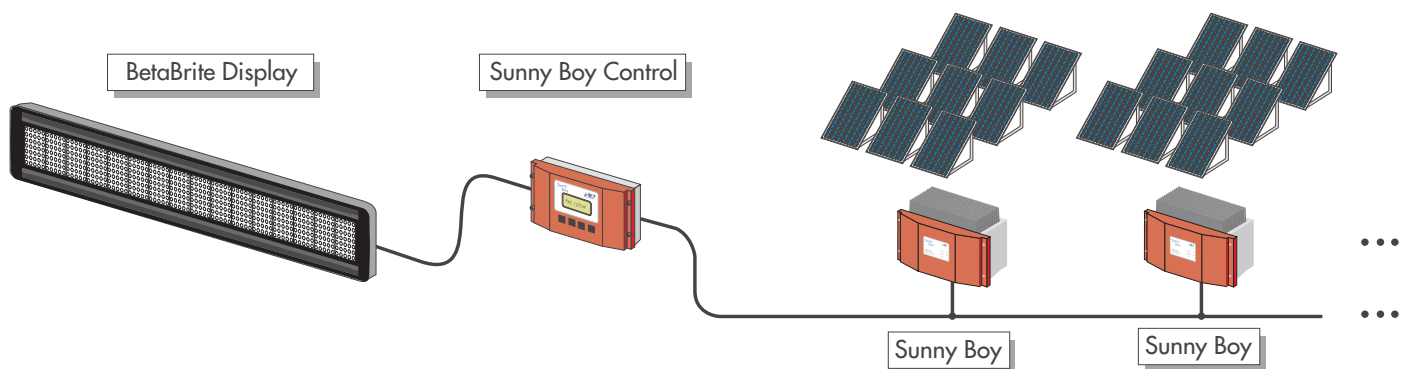
Overview

This document details the communication between an SMA Sunny Boy Control remote interface device and an Adaptive Microsystems / BetaBrite LED display.

Other Adaptive Microsystems displays may be used with the Sunny Boy Control Family, however, this document will use the BetaBrite for all examples. Proper configuration of this display requires configuration using an external program such as ActiveX or AlphaNET. This document does not attempt to describe all of the functions available in the Adaptive Microsystems displays. It will only describe a basic configuration.

Application

Many PV-plant owners wish to display the performance of their PV-system in a public forum. LED lobby displays allow for basic performance information to be clearly displayed at a reasonable cost. Display models vary in complexity and performance options to suit the owners requirements.

In order to provide this service to the PV community, SMA has developed software drivers for the Sunny Boy Control Family specific to a number of common display companies found throughout the world. These companies include Datalite, HvG, Siebert, EnergieCom, and Adaptive Microsystems. This document is specific to configuring communication with the Adaptive Microsystems BetaBrite display.
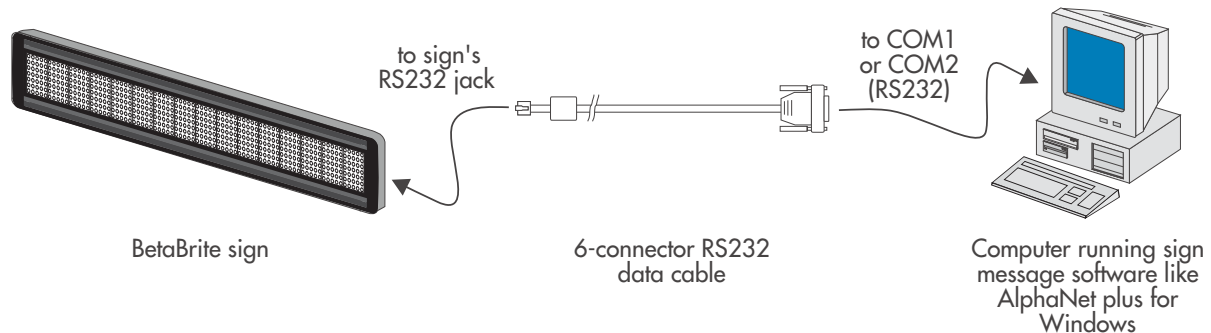
Necessary Equipment

The following equipment is necessary to connect a BetaBrite display with a Sunny Boy Control (SBC):

- Sunny Boy Control Light, Sunny Boy Control or Sunny Boy Control Plus

- Communication cable, DB9 female to RJ12, available at SMA-America in 5, 10, 15 and 20 meter lengths

- BetaBrite LED display, configured for communication with the SBC

    Preprogrammed displays are available at SMA America. Call for further details.

| BetaBrite sign | 6-connector RS232 data cable | Computer running sign message software like AlphaNet plus for Windows |

### The following additional equipment is necessary to program the BetaBrite displays:

- Gender changer adapter, male-to-male

- Programming software (ActiveX or AlphaNet)

Choosing a Sunny Boy Control

All of the Sunny Boy Control remote interface devices are equipped with drivers for communication to the Adaptive Microsystems display devices. You must use a SBC device to interface with the display. The displays are not capable of direct communication with the Sunny Boy inverters. The SBC Light and SBC require use of the COM2:PC port for connection to the BetaBrite display. The SBC Plus may be configured for either COM2:PC or COM3:AUX.

Cable Requirements

If you choose to construct a communication cable, please refer to the following:
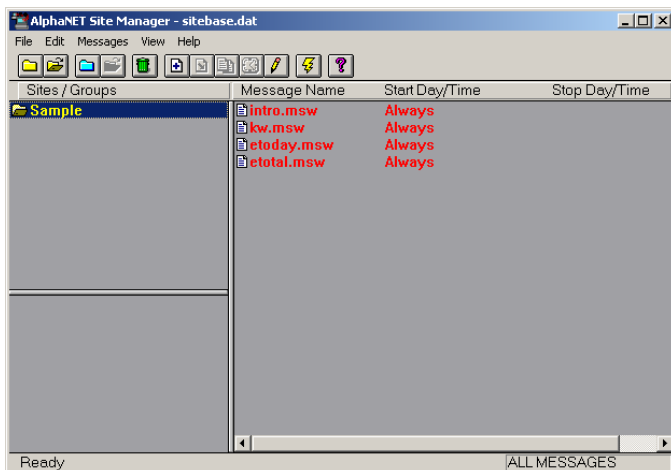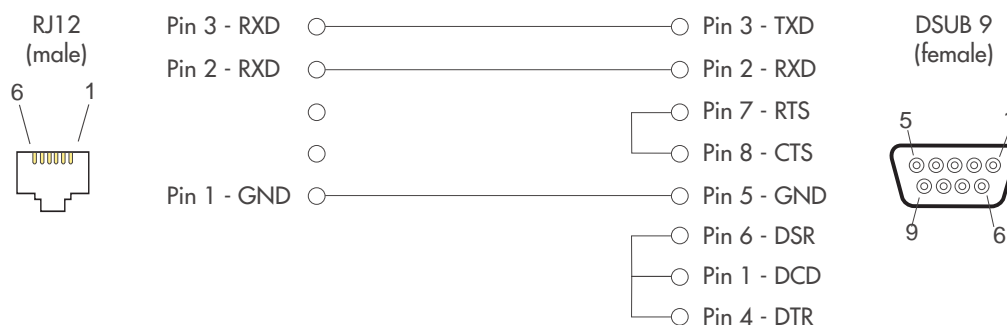

RS232 is the communication protocol used between the Adaptive Microsystems / BetaBrite sign and the SBC device. Therefore, the wire distance should be kept as short as possible. 15 meters is the maximum recommended cable length, however, longer distances may work.

Programming the BetaBrite LED Display

The following example uses the AlphaNET V2 software package. This program is not available at SMA America. Contact Adaptive Microsystems for more information. Please refer to the AlphaNET operations manual for detailed information on programming LED displays.

Using AlphaNET to program the BetaBrite display.

The AlphaNET software consists of two primary programs for configuring the Adaptive Microsystems displays:


Site Manager:

The Site Manager organizes sign messages in a directory tree structure. The project name or specific sign is represented by the root directory, and the sub-directories represent the individual program files which will run sequentially on the display. Each individual program file maintains configurations (color, graphics, speed, scrolling, etc.) specific to that program. Each program may only contain one configuration type, i. e. you cannot have two different colors formats in one program file.

The following steps will walk you through a basic message that will display the daily kW-Hr production of a Sunny Boy PV-plant.
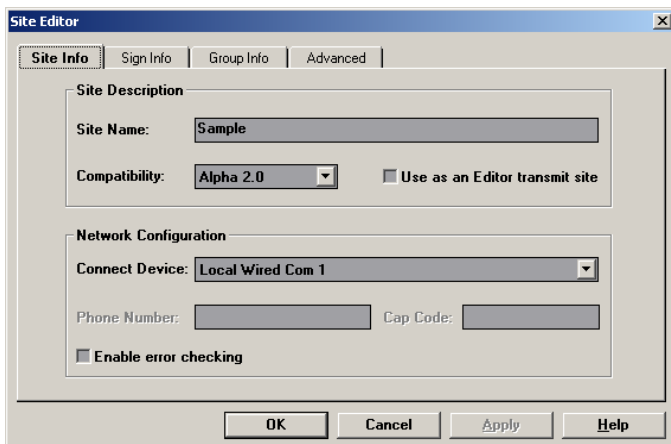

1. From the Site Manager, select File / New Site.

2. Enter a Site Name, and select Alpha V2.0 Compatibility. Make sure the Connection Device is set to the local communication port (typically Com1 on most computers) used to interface the PC to the display.

3. Nothing needs to be done in the Sign Info or Group Info tabs.
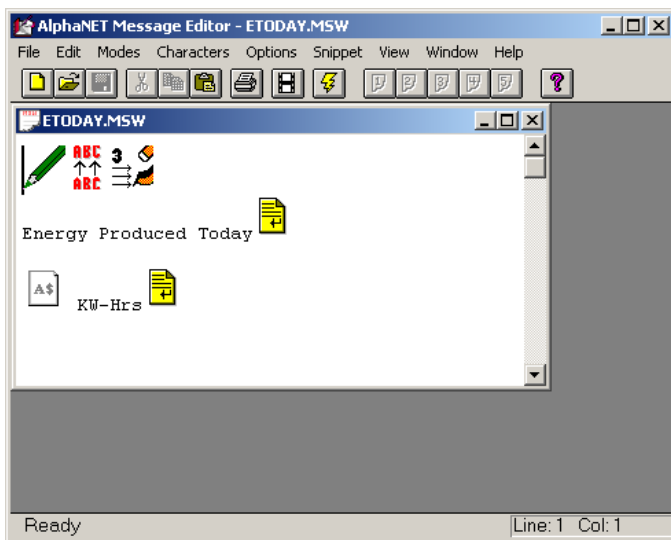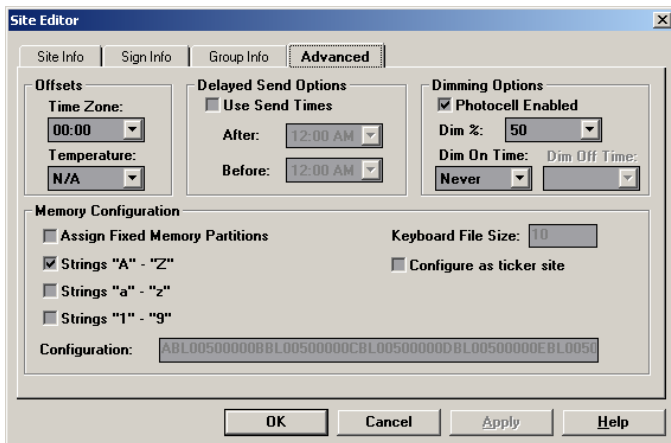
4. In the Advanced Tab, select Strings "A" – "Z"..

5. Select OK.

6. From the Message Editor select File / Select New. Immediately, save this file. It will be stored as an MSW file.

7. From this editor window, enter a text message.

8. Select File / Simulate to see how the display will appear on the BetaBrite. When the simulator appears, you can right-click on the display and choose Change Display to select the exact model of display you are programming.

9. Select the various message formats from the Modes, Characters and Options pull down menus. All configuration parameters for the text message should appear prior to the actual text.

10. To enter the data that will be read from the SBC, select Options / String, then enter B, for the first data placeholder in the SBC. This is equivalent to Display Channel 01 in the SBC. Subsequent data channels will follow as C, D, E …up to Z. The A data byte is reserved for SBC use.

11. When finished programming, save the file.

12. From the Site Manager Program, select Messages / Add and direct the window to the file that was just saved. The Site Manager will load the file in under the Directory created in Steps 2-5.

13. Download the message to the BetaBrite sign by selecting File / Transmit / Selected Sites. The sign will immediately start the new program.

14. Subsequent message files may be created and loaded into the Site Manager. They will run in the order shown in the Site Manager Message Name window.

Configuring the Sunny Boy Control String Parameters

The SBC is configured with default parameters in 25 locations. These parameter channels are, by default, disabled to conserve on the communication buss overhead. To configure the SBC to communicate with the BetaBrite display, you must first configure the SBC communication port, enable the parameter channels and configure each channel for the data of interest and display format.
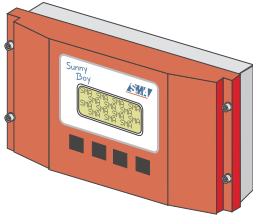
The following instructions will describe configuring the first channel in the SBC to send the E-today value to the BetaBrite display. The BetaBrite is connected to the "PC/COM2" in this example.

1. Turn on the SBC controller.

```
»Meas. Data
---------------
 »Diagnosis
+»Setup         ↑
```

2. Enter the Installer parameter. Press ESC, scroll down and select "Setup" (ENTER), then select Parameter. Enter the User parameter. It is the numerical sum of the month, day and year. For example March 30, 2002 is 3 + 30 + 2 = 35. With the up and down arrow keys enter [ID0035_]. The SBC will beep 3 times if the code is correct. If the code does not work, verify the SBC date setting is correct.

```
[   INTERFACES   ]
 »Communication
 »Modem
+»Ext. Display  ↓
```

3. Select "Interfaces" / "Ext. Display".

4. Scroll once down from Interface. It should display "-deactivated". Press ENTER and scroll down unit it reads COM2: PC. Press ENTER, then ESC. The arrow to the left of the display will return to solid.

```
 Interface
 …COM2:PC
 Type
+…Adaptive Micro
```

5. Scroll down to "Type", and select "Adaptive Micro" in the same manner.

```
[   DISPLAY-NO.  ]
+·»Display…01
 ·»Display…02
 ·»Display…03
```

6. Scroll down to "Configure". This menu contains all 25 Display Channels. A dot to the left of the Display line indicates that parameter is active. Press ENTER on Display 01.

```
[SC:C.SELECTION]
   Pac
   E-total
+·E-today
```

7. On the first line press ENTER to select configure the data that will be broadcast on channel Display 01. For this example we will select E-today as seen by the SBC. Select the SC…########## to choose the Sunny Boy Control with all connected Sunny Boy inverters. Next scroll down to "E-today" and press ENTER.

```
[   DISPLAY 01   ]
 Dev.:Channel
 …SC:E-today
+Format…………04.0
```

8. Press ESC twice and watch the display. Verify the E-today is shown in the Channel.

9. Change the format if desired. Format 04.0 will display 4 digits with no decimal. Format 06.2 will display 6 digits, two of which will be to the right of the decimal (i. e. 2425.98).

10. Press ESC four times until you are prompted 'Do you want to save the changes?'. Press ENTER once.

11. The SBC is now configured to broadcast the daily energy production value to Com2 for the Adaptive Display devices.

12. Connect the SBC to the BetaBrite display. The SBC data will be displayed in the sign's text message.

Appendix

Contact Information

SMA Regelsysteme GmbH
www.SMA.de
Hannoversche Str. 1-5
34266 Niestetal
DEUTSCHLAND

BetaBrite LED Displays:
www.betabrite.com

Adaptive Microsystems:
www.adaptivemicrosystems.com